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Reply to Office Action of December 17, 2003

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Amendments to the Claims:

Please amend the claims as indicated below. The following list of claims supersedes any prior listing.

1.   (Currently Amended) A system for monitoring an industrial process, the system comprising;

a process controller;

an input module coupled to the process controller, the input module being adapted to input a plurality of parameters from a process for manufacture of a substance;

an external system coupled to the process controller;

a computer aided process module coupled to the process controller, the computer aided process module being adapted to compare at least two of the plurality of parameters against a predetermined training set of parameters, and being adapted to determine if the at least two of the plurality of parameters are within a predetermined range of the training set of parameters; and

an output module coupled to the process controller, the output module being adapted to output a result based upon the determining step and the external system.

2.   (Original) The system of claim 1 wherein the substance is selected from a petroleum product, a chemical product, a food product, a health product, a cleaning product, a biological product, and other fluid or objects.

3.   (Original) The system of claim 1 wherein the plurality of parameters are selected from an intrinsic element or an extrinsic element of the process.

4.   (Original) The system of claim 1 wherein the input module, the computer aided process module, and the output module are provided in a computer software program.

5.   (Original) The system of claim 1 wherein the computer aided process includes an algorithm selected from PCA, HCA, KNN CV KNN Prd, SIMCA CV, SIMCA Prd, Canon Prd, SCREAM, and Fisher CV.

6.   (Original) The system of claim 1 further comprising a normalizing module coupled to the process controller, the normalizing module being adapted to normalize each of the plurality of parameters before input into the computer aided process module.

7.   (Currently Amended) The system of claim 1 wherein the training ~~step~~ set of parameters are preprocessed in at least two of the computer aided processes.

8.   (Original) The system of claim 1 wherein the result is an affirmative response or a negative response, where the response is displayed on a terminal.

9.   (Original) The system of claim 1 wherein the computer aided process is selected from a library comprising a plurality of processes.

10.   (Original) The system of claim 9 wherein the plurality of processes includes at least a comparing process, a contrasting process, and a functional process.

11.   (Currently Amended) A system for monitoring an industrial process for the manufacture of materials or objects, the system comprising:
        an input module, the input module being adapted to input a plurality of process parameters from a process for manufacture of a substance or object;
        a library module coupled to the input module, the library module including a plurality of computer aided processes, each of the computer aided processes being capable of determining an output based upon a predetermined training set of the plurality of process parameters;
        an external system;

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an output module coupled to the library module and the external system, the output module being adapted to output a result based upon the external system, the predetermined training set, and the plurality of process parameters;

wherein each of the computer aided processes compares at least two of the plurality of process parameters against a portion of the training set of parameters and determines if the at least two of the plurality of process parameters are within a predetermined range of the portion of the training set of parameters.

12. (Original) The system of claim 11 wherein the substance is selected from a petroleum product, a chemical product, a food product, a health product, a cleaning product, a biological product, and other fluid or objects.

13. (Original) The system of claim 11 wherein the plurality of process parameters are selected from an intrinsic element or an extrinsic element of the process.

14. (Original) The system of claim 11 wherein the input module, the library module, and the output module are provided in a computer software program.

15. (Original) The system of claim 11 wherein the computer aided process includes an algorithm selected from PCA, HCA, KNN CV KNN Prd, SIMCA CV, SIMCA Prd, Canon Prd, SCREAM, and Fisher CV.

16. (Original) The system of claim 11 wherein the training set of parameters are preprocessed.

17. (Original) The system of claim 11 wherein the process parameters comprise at least olfactory information.

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18.   (Original) The system of claim 11 wherein the result is an affirmative response or a negative response, where the response is displayed on a terminal.

19.   (Original) The system of claim 11 wherein the library module comprises a plurality of processes.

20.   (Original) The system of claim 19 wherein the plurality of processes includes at least a comparing process, a contrasting process, and a functional process.

21.   (Currently Amended) A system for controlling a process, the system comprising:

a first field mounted device in communication with a process and configured to produce a first input; and

process manager receiving the first input and configured to apply a first model to the first input to identify a first predicted descriptor characteristic of a state of the process, and configured to consult a first knowledge based system to provide an output based upon the first predicted descriptor <u>and an external system</u>.

22.   (Original) The system of claim 21 wherein the process manager is a server in communication with the first field mounted device via a computer network.

23.   (Currently Amended) The ~~product~~ <u>system</u> of claim 21 wherein the process manager is a server in communication with a user through a network of computers utilizing a browser software program.

24.   (Currently Amended) The ~~product~~ <u>system</u> of claim 23 wherein the process manager is in communication with the first field mounted device via the computer network.

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25.   (Original) The system of claim 21 further comprising a second field mounted device receiving the output and adjusting an operational parameter of the process according to the output.

26.   (Original) The system of claim 21 further comprising an output module including an interface between the process manager and an associated system including at least one of a legacy system, an e-enterprise system, and a desktop application.

27.   (Original) The system of claim 21 wherein the first knowledge based system is an expert system.

28.   · (Original) The system of claim 21 wherein the model is constructed utilizing one of a univariate statistical technique, a multivariate statistical technique, a time series analysis, and a neural-based technique.

29.   (Original) The system of claim 21 further comprising a library configured to store one of a group of different algorithms utilized to construct the first model.

30.   (Canceled)

31.   (Original) The system of claim 21 further comprising a second model, the process manager configured to apply the second model to the data to identify a second predicted descriptor characteristic of the process data, the process manager further configured to produce the output based upon the first predicted descriptor and the second predicted descriptor.

32.   (Original) The system of claim 21 further comprising:
a second model; and
a second knowledge based system, the process manager applying the second model to the data to identify a second predicted descriptor characteristic of the process data, the

second knowledge based system submitting one of the first predicted descriptor and the second

predicted descriptor to the first knowledge based system where the first predicted descriptor is

different from the second predicted descriptor.

33.   (Currently Amended) A monitoring system comprising:

a plurality of field mounted devices configured to detect characteristics reflecting

an environmental condition;

a processor in communication with the plurality of field mounted devices and

configured to receive the detected characteristics;

a plurality of external data sources in communication with the processor over a

network, the plurality of data sources storing data relevant to the environmental condition; and

a computer aided process module coupled to the processor, the computer aided

process module being adapted to compare the detected characteristics with the data stored by the

plurality of data sources; and

an output module coupled to the processor, the output module being adapted to

generate an output based upon comparison of the detected characteristics with the stored data.

34.   (Previously Presented) The system of claim 33 wherein said plurality of

field mounted devices includes at least one of a chemical sensor, a radiation sensor, and a

biological sensor.

35.   (Previously Presented) The system of claim 34 wherein said chemical

sensor is configured to produce a response in the presence of a chemical stimulus selected from

the group consisting of a vapor, a gas, a liquid, a solid, an odor or mixtures thereof.

36.   (Currently Amended) The system of claim 35 wherein said chemical

sensor is selected from the group consisting of a conducting/nonconducting regions sensor, a

SAW sensor, a quartz microbalance sensor, a conductive composite sensor, a chemiresistor, a

metal oxide gas sensor, an organic gas sensor, a MOSFET, a piezoelectric device, an infrared

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sensor, a sintered metal oxide sensor, a Pd-gate MOSFET, a metal FET structure, [[a]] an

electrochemical cell, a conducting polymer sensor, a catalytic gas sensor, an organic

semiconducting gas sensor, a solid electrolyte gas sensors sensor, and a piezoelectric quartz

crystal sensor.

37.   (Previously Presented) The system of claim 34 wherein said radiation

sensor is configured to produce a response in the presence of a stimulus selected from the group

consisting of gamma rays, X-rays, ultra-violet rays, visible radiation, infrared, microwaves, and

radio waves.

38.   (Previously Presented) The system of claim 34 wherein said biological

sensor is configured to produce a response based upon the presence of an organism or a

biochemical molecule.

39.   (Previously Presented) The system of claim 33 wherein the plurality of

data sources are selected from the group consisting of a database, an algorithm, a model, and a

knowledge based system.

40.   (Previously Presented) The system of claim 39 wherein the data

comprises characteristics detected at a previous time or in a different location.

41.   (Previously Presented) The system of claim 39 wherein the data

comprises a result from a model or algorithm having the detected characteristics as input.

42.   (Previously Presented) The system of claim 39 wherein the knowledge

based system is selected from the group consisting of an expert system, a self-learning system, a

logic system, and a fuzzy variant of the same.

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43.   (Previously Presented) The system of claim 33 further comprising a model generation module for generating a model of a phenomenon.

44.   (Previously Presented) The system of claim 43 wherein said model generation module generates a model derived from an event producing at least one of chemical, biological, and radiation stimuli in the environment.

45.   (Previously Presented) The system of claim 33 further comprising a diagnostic module identifying an event producing at least one of a chemical, biological, and radiation stimulus.

46.   (Previously Presented) The system of claim 33 wherein the output comprises notification regarding occurrence of an event.

47.   (Previously Presented) The system of claim 46 further comprising a module for initiating follow-on actions upon occurrence of the event.

48.   (Previously Presented) The system of claim 46 further comprising a communication module for communicating the output to alert a human monitor.

49.   (Previously Presented) The system of claim 48 wherein the communication module includes a server storing the output for access by a user through a browser software program.

50.   (Previously Presented) The system of claim 33 further comprising an associated system in communication with the processor over a network. the associated system including at least one of a legacy system, an e-enterprise system, and a desktop application.

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51.   (Previously Presented) The system of claim 33 further comprising a preprocessing module configured to modify the detected conditions.

52.   (New) The system of claim 33 wherein the plurality of external data sources comprise external systems.

53.   (New) The system of claim 52 wherein the external systems are selected from the group consisting of an ERP system, a LIMS system, and one of a duplicate and a sister of the process, such that the state of the environment may be externally validated by comparison with the external system.

54.   (New) The system of claim 1 wherein the external system is selected from the group consisting of an ERP system, a LIMS system, and one of a duplicate and a sister of the process.

55.   (New) The system of claim 54 wherein the external systems comprise a second process that is one of a duplicate and a sister of the process, such that a state of the process may be validated by comparison with the external system.

56.   (New) The system of claim 11 wherein the external systems are selected from the group consisting of an ERP system, a LIMS system, and one of a duplicate and a sister of the process.

57.   (New) The system of claim 56 wherein the external systems comprise a second process that is one of a duplicate and a sister of the process, such that a state of the process may be validated by comparison with the external system.

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58.   (New) The system of claim 21 wherein the external systems are selected from the group consisting of an ERP system, a LIMS system, and one of a duplicate and a sister of the process.

59.   (New) The system of claim 58 wherein the external systems comprise a second process that is one of a duplicate and a sister of the process, such that a state of the process may be validated by comparison with the external system.